



Product Information

Trifluoromethanesulfonic acid

Product Number **T 1394**
Storage Temperature -0 °C

Product Description

Molecular Formula: $\text{CHF}_3\text{O}_3\text{S}$
Molecular Weight: 150.1
CAS Number: 1493-13-6
Density: 1.696 g/ml
Synonyms: triflic acid

Trifluoromethanesulfonic acid is a widely used reagent in organic chemistry. Its enhanced thermal stability and resistance to oxidation and reduction make it especially useful as a reactant and solvent. Large scale applications include use in the plastics industry as an oligomerization-polymerization catalyst and in the production of conducting polymers, and the manufacture of herbicides, growth regulators, and vitamins.

Numerous publications have described the use of triflic acid in the preparation of various classes of compounds. These include pyrrolidines, piperidines, γ -lactams, phorbol ABC ring analogues, β -amino aromatic ketones by intermolecular Friedel-Crafts acylation, chiral Lewis superacids, and thioesters.^{1,2,3,4,5}

A protocol has been reported for the transfer of *p*-methoxybenzyl ethers from alcohols to sulfonamides in the presence of catalytic triflic acid.⁶ An analysis of the rearrangement of pivalaldehyde to methyl isopropyl ketone in the presence of triflic acid has been published.⁷

Triflic acid is used as a deglycosylating agent for the analysis of glycoproteins.^{8,9,10}

Precautions and Disclaimer

For Laboratory Use Only. Not for drug, household or other uses.

Preparation Instructions

This product is miscible in water (0.1 ml/l, v/v), yielding a clear, colorless solution.

References

- Schlummer, B., and Hartwig, J. F., Bronsted acid-catalyzed intramolecular hydroamination of protected alkenylamines. Synthesis of pyrrolidines and piperidines. *Org. Lett.*, **4(9)**, 1471-1474 (2002).
- Marson, C. M., et al., An Asymmetric Synthesis of Aza Analogues of the Tricyclic Skeleton of Daphnane and the ABC Ring System of Phorbol. *J. Org. Chem.*, **68(3)**, 792-798 (2003).
- Anderson, K. W., and Tepe, J. J., The first intermolecular Friedel-Crafts acylation with β -lactams. *Org. Lett.*, **4(3)**, 459-461 (2002).
- Corey, E. J., et al., Asymmetric Diels-Alder reactions catalyzed by a triflic acid activated chiral oxazaborolidine. *J. Am. Chem. Soc.*, **124(15)**, 3808-3809 (2002).
- Imura, S., et al., Direct thioesterification from carboxylic acids and thiols catalyzed by a Bronsted acid. *Chem. Commun. (Camb.)*, **1**, 94-95 (2002).
- Hinklin, R. J., and Kiessling, L. L., *p*-Methoxybenzyl ether cleavage by polymer-supported sulfonamides. *Org. Lett.*, **4(7)**, 1131-1133 (2002).
- Olah, G. A., et al., Acid-catalyzed isomerization of pivalaldehyde to methyl isopropyl ketone via a reactive protosolvated carboxonium ion intermediate. *J. Am. Chem. Soc.*, **123(47)**, 11556-11561 (2001).
- Lower, B. H., and Kennelly, P. J., The membrane-associated protein-serine/threonine kinase from *Sulfolobus solfataricus* is a glycoprotein. *J. Bacteriol.*, **184(10)**, 2614-2619 (2002).

9. Fryksdale, B. G., et al., Impact of deglycosylation methods on two-dimensional gel electrophoresis and matrix assisted laser desorption/ionization-time of flight-mass spectrometry for proteomic analysis. *Electrophoresis*, **23(14)**, 2184-2193 (2002).
10. Douglass, J. F., et al., Chemical deglycosylation can induce methylation, succinimide formation, and isomerization. *J. Protein Chem.*, **20(7)**, 571-576 (2001).

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